No. 786,703. PATENTED APR. 4, 1905.

C. A. WILSON.

SAWMILL SET WORKS.

APPLICATION FILED AUG. 16, 1904.

2 SHEETS—SHEET 1.

Fig. 6.

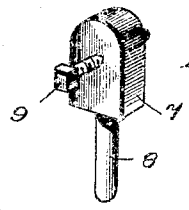


Fig. 3.

Fig. 5.

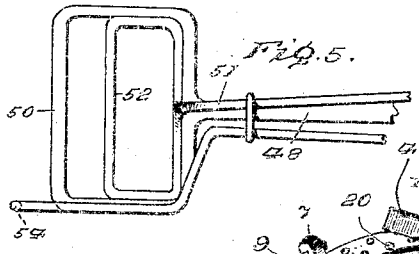
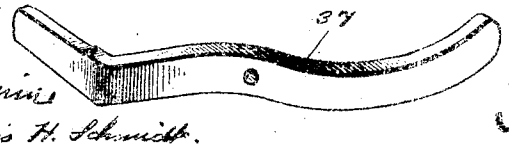


Fig. 7.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

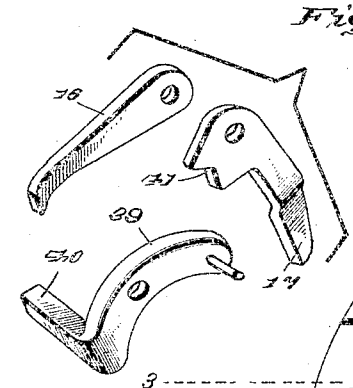
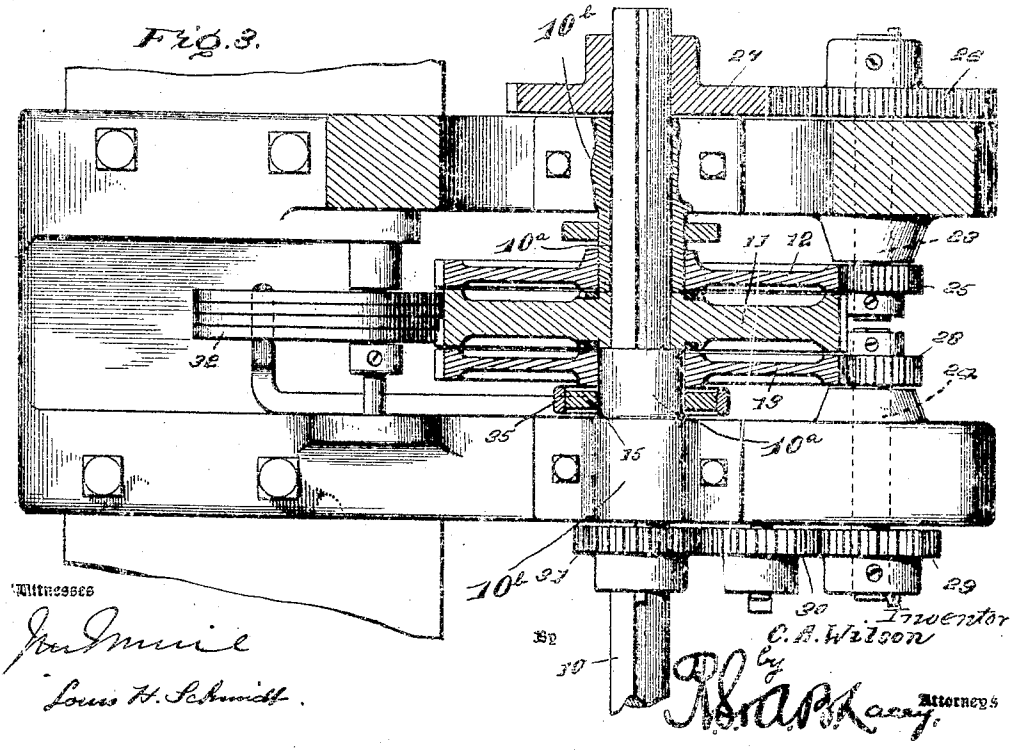


Fig. 2.

Fig. 3.



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No. 786,703. Patented April 4, 1905.

UNITED STATES PATENT OFFICE.

CHESTER A. WILSON, OF PLEASANT VALLEY, VIRGINIA.

SAWMILL SET-WORKS.

SPECIFICATION forming part of Letters Patent No. 786,703, dated April 4, 1905.

Application filed August 16, 1904. Serial No. 220,965.

To all whom it may concern:

Be it known that I, CHESTER A. WILSON, a citizen of the United States, residing at Pleasant Valley, in the county of Fairfax and State of Virginia, have invented certain new and useful Improvements in Sawmill Set-Works, of which the following is a specification.

The invention relates to an improvement in sawmill set-works, and particularly to a manually-operated type of novel structure and arrangement.

The main object of the invention is to provide manually-operable means for adjusting the log-knees in either direction with relation to the saw and at variable speeds.

The invention, broadly stated, comprehends a knee-adjusting shaft carrying a fixed gear, speed and reversing gears arranged for operative engagement with said shaft, and means to operate said latter gears at will in the movement of the lever.

The details of the preferred embodiment of my improved set-works will be fully described in the following specification and are clearly shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a set-works constructed in accordance with my invention. Fig. 2 is an enlarged longitudinal central section of the same. Fig. 3 is an enlarged horizontal section of the same, taken just above the knee-adjusting shaft. Fig. 4 is perspective details of the pawls and operating-arm for the main gear. Fig. 5 is a broken plan bottom, showing the operating end of the auxiliary handle. Fig. 6 is a perspective of one of the stops for limiting the operation of the set-works. Fig. 7 is a perspective view of the pawl-lifting arm.

Referring to the drawings, wherein like reference-numerals indicate like parts throughout the several views, my improved set-works comprises a frame 1, arranged to be secured to a suitable rail 2 of a saw-carriage. The frame is preferably of metal and comprises bars 3 and 4, secured to project at right angles and beyond the edge of the rail 2, as shown. One bar, 3, is formed with an arc-shape extension 5, the periphery of which is formed with a series of holes 6 to receive stops 7. The holes are preferably arranged in two or more rows, the holes of one row being intermediate the holes of adjoining row, whereby to secure variable adjustments. The stops 7 are of a size and shape to limit the movement of the mechanism, as hereinafter described, being provided with depending pintles 8 to enter any of the holes 6. The forward stop is provided with a transversely-operating set-screw 9 for a purpose hereinafter described.

The knee-adjusting shaft 10 is revolubly supported in the arms 3 and 4, being arranged parallel with the carriage-rail 2 and provided at one end with means for moving the log-knees. (Not shown.) On the shaft 10, between the arms 3 and 4, is fixedly secured a main gear 11, and contiguous this gear and loose upon extensions 10^a 10^a of the bearings 10^b are arranged the speed-gear 12 and the reversing-gear 13. These gears are preferably arranged one each side the main gear and in close relation thereto.

14 represents the operating-lever of the usual hand type, branched at its lower end to provide arms 15, the lower ends of which encircle and are pivotally supported on extensions 10^a 10^a. A series of pawls 16 are pivoted between the arms 15 of the lever with their free ends arranged for operative engagement with the main gear 11, these pawls being preferably arranged in plural number rather than a single pawl to insure a certainty of action, some of the pawls being mounted on shaft 18 and some on shaft 21, hereinafter mentioned. A second pawl 17 is also mounted on the shaft 18, which pivotally supports some of the pawls 16, this pawl 17 being arranged for engagement with the main gear in a direction reverse to that of pawl 16. A pawl 19 is also mounted on the shaft 21, with its operative end arranged for engagement with the reversing-gear 13. A pawl 20, pivotally mounted upon a shaft 21, secured intermediate the arms 15, is arranged for operative engagement with the speed-gear 12.

Shafts 23 and 24 are arranged in horizontal alinement across the rear of the set-works, the shafts being respectively mounted in the bars 3 and 4. Intermediate the arms shaft 23 is provided with a fixed pinion 25, arranged to

mesh with the speed-gear 12, the end of shaft 23 beyond the bar 3 being provided with a pinion 26, arranged to mesh with a pinion 27, fixed upon the adjusting-shaft 10. Shaft 24 is provided intermediate the arms 3 and 4 with a pinion 28, arranged to mesh with the reversing-gear 13, this shaft 24 beyond the arm 4 being provided with a pinion 29, meshing with an idler-pinion 30, which pinion 30 meshes with the pinion 31, keyed upon the adjusting-shaft 10.

A set of pawls 32 are mounted intermediate the bars 3 and 4 with their ends engaging the main gear 11, whereby to prevent overrunning or backward movement of said gear.

To provide for the suitable manipulation of the various pawls to obtain the object desired, I provide rods 33 and 34, the former being arranged to control the operation of the reversing-gear, while the latter controls the operation of the speed-gear. The arm 33 is provided at its lower ends with a loop-form terminal 35, which passes beneath the shaft 10 and upwardly to the pawl 19, being there bent at a right angle, as at 36, to underlie said pawl. The crown of the loop 35 rests upon one end of a lifting-arm 37, pivoted between the bars 3 and 4, with its opposite end underlying the free ends of the pawls 32. Adjacent the pawl-shaft 18 the rod 33 is provided with a laterally-extending stud 38, which engages a lifting-arm 39, which arm is pivotally mounted upon shaft 18 and has a transverse bar 40, which underlies the pawl 16 forward of their pivots. The rear end of pawl 17 is notched at 41 to receive the bar 40, whereby upward movement of said bar 40 will lift the pawls 16 from engagement with the main gear 11 and at the same time force the pawl 17 into engagement with said gear. The lower end of rod 34 is connected to a rearward extension of the pawl 20, whereby an upward movement of said rod will force the pawl 20 into engagement with the speed-gear 12. The upper ends of the rods 33 and 34 are connected to operating-handles 42 and 43, respectively, having bent lower terminals, as shown, and pivotally supported on a stud 44, arranged transversely of the lever 14, near the handle end of the latter. The handles are held in certain positions in the normal condition of the parts through the medium of springs 45 and 46, respectively, the former of which is arranged to hold the rod 33 in the extreme of upward movement, while the latter is arranged to hold the rod 34 in the extreme of downward movement, this being the normal position of the parts. In this normal position the rod 33 being elevated will hold the pawl 19 out of engagement with the reversing-gear, the crown of the loop 35 out of contact with the lifting-arm 37, and the transverse bar 40 of the lifting-arm 39 out of engagement with the pawls 16, while the rod 34 being at the limit of its downward movement will maintain the pawl 20 out of engagement with the speed-gear 12.

An arm 47 projects laterally from the lever 14, riding in close proximity to the periphery of the extension 5, serving to limit the movement of the lever in both directions by contact with the stops 7.

Assuming the parts in normal position, the operation of the set-works is as follows: A reciprocatory movement of the handle end of lever 14 will turn the main gear 11 by means of the pawls 16, thus advancing the gear and turning the adjusting-shaft 10, and thereby adjusting the log-knees connected to the shaft 10. If it is desired to reverse the movement of shaft 10, the handle 42 is depressed or swung downward on its pivot against the tension of spring 45, which movement depresses rod 33, elevating pawls 16 by lifting-arm 39, forcing the backing-pawls 32 out of engagement with gear 11 through movement of the lifting-arm 37 and permitting pawl 19 to engage the reversing-gear 13. A reciprocatory movement of the lever will now advance or turn the reversing-gear forward, driving pinion 28 and 29 on shaft 24 rearward and through the idler 30 driving pinion 31 rearward. As pinion 31 is fast on shaft 10, said shaft will be revolved in a direction reverse to its movement under influence of the main gear 11. By releasing the pressure on the handle 42 the spring 45 operates to return all parts to normal position, as will be evident. To accelerate the speed of shaft 10 beyond that possible by gear 11, I elevate rod 34 by swinging handle 43 on its pivot, which elevation of the rod forces pawl 20 into coöperation with the speed-gear 12. Reciprocatory movement of the lever 14 will revolve the gear 12, turning the pinions 25 and 26 on the shaft 23 and through the latter turning pinion 27, and hence shaft 10. As pinion 25 is considerably smaller than gear 12 and pinions 26 and 27 the same size, it is evident the shaft 10 will be more rapidly revolved than when actuated by the main gear 11. The reciprocatory movement or throw of lever 14 is limited by its arm 47 contacting with the stops 7, which latter may be adjusted in holes 6 to secure any desired length of stroke, a further adjustment to limit the throw of the lever between adjacent holes being secured by proper setting of screw 9, as will be evident.

To permit proper operation of the parts from the side of the saw-carriage opposite to that on which the set-works is mounted, I provide a pull-rod 48, pivoted at 49 to the lever 14 near the upper end and having a stirrup-handle 50. A rod 51, having a stirrup-handhold 52, is fixed at one end to handle 42 above its pivot, whereby pull on the rod will suitably operate rod 33. A second rod 53, having a handle end 54, is connected to handle 43 and arranged to operate rod 34 when

forced inwardly. The handhold 52 is mounted within the handle of the pull-rod 48, while the end 54 of rod 53 is turned upward at a right angle a slight distance beyond said handle 50, whereby rod 51 may be operated by a pull and rod 53 by pressure without releasing the handle 50 of the pull-rod 48. The operation of the set-works by use of the pull-rod is fully apparent, it being understood that such pull-rod and connected parts may be of any length desired to position them convenient to the operator.

The fixed gears and pinions may be keyed to the shaft; but I prefer to use the ordinary set-screw attachment in connection with the groove in the shaft.

It will be noted that the operative throw of the lever is in the same direction during the direct or reverse movement of shaft 10, the difference in direction being gained by manipulating the pawls as described.

I do not wish to be understood as limiting myself to the precise construction herein shown and described, as I consider all obvious changes of structure and arrangement as within the scope and spirit of my invention.

Having thus described the invention, what is claimed as new is—

1. A sawmill set-works comprising a knee-adjusting shaft, a lever, and means operated by the lever to drive the shaft in direct, reverse, or accelerated movement.

2. A sawmill set-works comprising a knee-adjusting shaft, a main gear fixed upon said shaft, a speed-gear loose upon the shaft, connections between the speed-gear and the shaft, a lever, and interchangeable means operated by the lever for actuating the main gear and the speed-gear.

3. A sawmill set-works comprising a knee-adjusting shaft, a main gear fixed upon said shaft, a speed-gear loose upon the shaft, connections between the speed-gear and the shaft, a reversing-gear loose upon the shaft, a lever, and interchangeable means operated by the lever for actuating said gears.

4. A sawmill set-works comprising a knee-adjusting shaft, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, connections between the speed-gear and the shaft, a reversing-gear loose upon the shaft, a lever for operating all of said gears, and means for connecting the lever with the speed-gear and with the reversing-gear at will.

5. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, an operating-lever pivotally mounted on the frame, pawl mechanism connecting the main gear and lever, pawl mechanism connecting the speed-gear and lever, and means for controlling said latter pawl mechanism.

6. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, an operating-lever pivotally mounted on the frame, pawl mechanism connecting the main gear and lever, pawl mechanism connecting the speed-gear and lever, and manually-operable means for controlling the pawl mechanism.

7. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, a reversing-gear loose upon the shaft, gearing between the speed-gear and the shaft, gearing between the reversing-gear and the shaft, a lever pivotally mounted upon the frame, interchangeable means carried by the lever to operate the said gears, and means for controlling the connection of the lever with said gears.

8. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, connection between the speed-gear and the shaft to accelerate the movement of the latter in the operation of the former, a reversing-gear loose upon the shaft, connection between said gear and the shaft to reverse the movement of the latter in the operation of the former, and a lever for operating either of said gears at will.

9. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, connection between the speed-gear and shaft to accelerate the movement of the latter in the operation of the former, a reversing-gear loose upon the shaft, connections between said gear and the shaft to reverse the movement of the latter in the operation of the former, a lever for operating either of said gears at will, pawl mechanism connecting said lever and the main, speed, and reversing gears, and means to operate said mechanism to connect the lever with either of said gears.

10. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, connection between the speed-gear and shaft to accelerate the movement of the latter in the operation of the former, a reversing-gear loose upon the shaft, connection between said gear and the shaft to reverse the movement of the latter in the operation of the former, a lever for operating either of said gears at will, pawl mechanism connecting said lever and the main, speed and reversing gears, rods connected to said pawl mechanism, and means for operating the rods.

11. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, connection between the speed-gear and shaft to accelerate the movement of the latter in the operation of the former, a reversing-gear loose upon the shaft, connection between said gear and the shaft to reverse the movement of the latter in the operation of the for-

mer, a lever for operating either of said gears at will, pawl mechanism connecting the lever and main gear, a pawl arranged for connecting the lever and the speed-gear, a pawl arranged for connecting the lever and reversing-gear, a rod for operating the speed-gear pawl, and a second rod for operating both the main-gear pawls and the reversing-gear pawls.

12. A sawmill set-works comprising a knee-adjusting shaft, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, a reversing-gear loose upon the shaft, a lever, pawl mechanism connecting the lever and gears at will, and means for limiting the throw of the lever.

13. A sawmill set-works comprising a knee-adjusting shaft, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, a reversing-gear loose upon the shaft, a lever, pawl mechanism connecting the lever and gears at will, and adjustable stops for limiting the throw of the lever.

14. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, an operating-lever pivotally mounted on the frame, pawl mechanism connecting the main gear and lever, pawl mechanism connecting the speed-gear and lever, means for controlling said latter pawl mechanism, and a pull-rod connected to the operating-lever.

15. A sawmill set-works comprising a frame, a shaft mounted therein, a main gear fixed upon the shaft, a speed-gear loose upon the shaft, an operating-lever pivotally mounted on the frame, pawl mechanism connecting the main gear and lever, pawl mechanism connecting the speed-gear and lever, a pull-rod connected to the operating-lever, and means carried by the pull-rod to operate said pawl-controlling mechanism.

In testimony whereof I affix my signature in presence of two witnesses.

CHESTER A. WILSON. [L. S.]

Witnesses:
G. P. WILSON,
E. L. ROBEY.